7 Concrete Approaches

Grade Preparation

Forms

Concrete Composition and Placement

Finishing and Curing

Joints

Concrete Approach Thickness

Opening to Traffic

Construction and Inspection Procedures

Measurement and Payment

CHAPTER SEVEN: CONCRETE APPROACHES

This chapter discusses the construction requirements for approaches to concrete private driveways, concrete commercial drives (Figure 7-1), and concrete mailbox approaches.

The construction techniques for each type of approach are basically the same, the differences being the thickness, shape, and classification of each. The type or class of drive is specified in the plans. Details of these may be found on Standard Sheets **610-PRAP-14**, **610-DRIV-01, 03, 08**, and **15**.

Figure 7-1. Commercial Drive Approach

GRADE PREPARATION

Grade preparation for commercial and private driveway approaches is much the same as for concrete pavement. Section **207** provides further details of the requirements.

The top 6 in. of the subgrade is required to be compacted to 100% of the maximum dry density . If any of the subgrade material is soft or yielding or cannot be satisfactorily compacted, the subgrade is required to be corrected or removed.

During subgrade preparation and after completion, adequate drainage is required to be provided to prevent water from standing on the subgrade; however, the subgrade is required to be uniformily moist prior to concrete placement.

FORMS

Wood forms (Figure 7-2) or metal forms are generally required for concrete approaches. The forms are required to be of sufficient strength to resist springing and have enough stakes, pins, or bracing to firmly hold true to line and grade during placement of the concrete. The alignment of the forms is required to not deviate more than 1/4 in. in the horizontal direction from the planned PCCP width tangent sections. Forms are staked into place with a minimum of three pins for each 10 ft section. A pin is placed at each side of every joint. Form sections are locked tightly and are required to be free from play or movement in any direction. Forms are also required to be clean and oiled prior to the placing of concrete.

Figure 7-2. Approach Forms

When a construction joint or a dowelled joint is required, the forms used are required to be drilled or slotted to allow for the placement of the steel or dowels.

CONCRETE COMPOSITION AND PLACEMENT

The concrete used for private and commercial drives may be paving concrete in accordance with Section **500** or class A concrete in accordance with Section **702**. Proper consolidation of the concrete is vital to the integrity of the approach. Consolidation is obtained in place through use of vibration equipment to consolidate the full width and depth of the strip of PCCP being placed. Vibrators may be either the surface pan type or the internal type with either immerse tube or multiple spuds.

FINISHING AND CURING

Concrete for approaches is finished with equipment in accordance with the Specifications. Hand methods of finishing may be used when finishing equipment breaks down or in tight working areas where field conditions limit the use of mechanical devices (Figure 7-3). Hand placed concrete is further finished by means of a longitudinal float or an approved transverse smoothing float.

Figure 7-3. Strike-Off Screed

The finishing operation is required to be done so that an excess of mortar and water is not worked to the top of the concrete. Particles collected in front of the screed are required to be thoroughly mixed into the unfinished concrete, while keeping a sufficient roll of material in front of the screed. This procedure helps prevent depressions or " ponds" from forming in the approach.

After final strike-off, floating is done to obtain a more true and even surface. All edges are finished using a 1/4 in. radius edging tool. Finally, the textured surface of the approach is tined, unless otherwise specified. Tining consists of transverse grooves that are between 3/16 in. and 1/8 in. in width and between 1/8 in. and 3/16 in. in depth.

Curing is required for a period of 96 h after placement of the concrete. This is normally achieved by covering the approach with plastic sheeting (Figure 7-4) or blankets, or by the use of a curing compound. Other methods of curing may be used as well. If there is the danger of freezing, sufficient straw or blankets are required to be used to prevent the concrete from freezing during curing.

Figure 7-4. Curing with Plastic Sheeting

JOINTS

Joint requirements are specified in the Standard Drawings. Joints that may be required are longitudinal joints, expansion joints, keyway joints, and ear construction joints.

CONCRETE APPROACH THICKNESS

The Contractor is required to obtain cores at the locations determined by the PE/PS in accordance with **ITM 802** for the purpose of obtaining the actual thickness of the in-place approach. Four cores are taken for each 1200 yd^2. No core is required when less than 1200 yd^2 is placed. Four inch diameter cores are taken in the presence of the PE/PS for the full depth of the concrete approach and the PE/PS takes immediate possession of the cores. Cores are not to be taken within 2 ft of the edge of pavement, over dowels, or within 5 ft of a transverse construction joint. The cores are measured by District Testing. Core holes are filled in accordance with Specifications. Cores are not taken in formed drives unless otherwise directed. Corrections of 1/4 in. deficiencies in thickness are made before the pour.

OPENING TO TRAFFIC

As in pavement, approaches are required to be closed to traffic for 14 days after placement or until the test beams indicate a modulus of rupture of at least 550 psi. If fly ash is used in the concrete, the 14 day rule does not apply and only the modulus of rupture is used for this determination.

CONSTRUCTION AND INSPECTION PROCEDURES

The following construction and inspection procedures are required:

1) The subgrade is required to be firm. The length, width, and depth are required to be checked before the concrete is poured.

2) A string or other device is required to be placed across the top of the forms using the same procedure that the concrete is struck off to verify the depth.

3) If the drive is over 10 ft in length and not reinforced, a transverse joint is required to be placed so that no section of the drive is over 10 ft long. The joint depth and location is required to be as shown in the Standards.

4) Opening to traffic is required to be controlled so that premature cracking or damage to the drive does not occur. Close adherence to curing requirements also helps prevent damage to the concrete.

5) All on-site testing of materials is required to be done according to the frequencies stated in the Frequency Manual. Materials are checked to verify they are approved for use. All required basis for use documents are required for the material records.

6) All items are required to be measured and documented for payment on a daily basis. These measurements are required to be accurate enough for final payment so that additional measurements are not be required at a later date.

MEASUREMENT AND PAYMENT

Concrete for approaches is measured by the square yard of the thickness specified and paid as Portland Cement Concrete Pavement for Approaches. The length and width of the approach is required to be as shown on the plans.